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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
HOWARD, ZACHARY C	
ART UNIT	PAPER NUMBER
1646	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
31 DAYS	01/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Office Action Summary	Application No.	Applicant(s)	
	10/826,572	APARICIO ET AL.	
	Examiner	Art Unit	
	Zachary C. Howard	1646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 November 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-60* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-60* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Note

For purposes of restriction, claims 43 and 44 have not been placed with any of the inventions. Claim 43 is directed to a "method according to Claim 23"; however, claim 23 is directed to a transgenic animal, and not a method. Similarly, claim 44 is directed to a "method according to Claim 24"; while claim 24 is directed to a transgenic animal. Therefore, it is unclear whether claims 43 and 44 should be placed with inventions directed to a transgenic animal, a method of using a transgenic animal, or another method. Applicants are requested to clarify this issue. If Applicants amend the claims to clarify this issue, the claims will then be placed with the appropriate group.

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1, 4, 5, 38-40, 46 and 47, in so far as they are drawn to polypeptides and compositions, kits or agents comprising said polypeptides, or a method of using the polypeptide to prepare a pharmaceutical composition, classified in class 530, subclass 350.

II. Claims 2, 3, 6-19, 38-40, 46, 47, 51 and 52, in so far as they are drawn to nucleic acids, vectors comprising said nucleic acids and host cells comprising said nucleic acids or said vectors, and compositions, kits or agents, comprising said nucleic acids, vectors, or host cells, or a method of using said nucleic acid, vector or host cell to prepare a pharmaceutical composition, and a method of using said host cell for producing a polypeptide, classified in class, subclass 536/23.5 for the nucleic acid.

III. Claims 20-28 and 48-50, drawn to transgenic non-human animals, classified in class 800, subclass 13.

IV. Claims 29 and 31-33, drawn to a method of using a polypeptide to identify a compound that interacts with, binds to or is an antagonist to a polypeptide, classified in class 435, subclass 7.2.

V. Claim 30, drawn to a method of using a transgenic non-human animal to identify a compound that interacts with a polypeptide, classified in class 800, subclass 3.

VI. Claims 34, 35, 37-40, 46, 47, 56, 59 and 60, in so far as they are drawn to a compound that binds to, interacts with, or is an agonist or antagonist of a polypeptide (including antibodies), kits and agents comprising said compound, and a method of preparing a pharmaceutical composition comprising said compound, classification dependent on compound structure, for example class 530, subclass 387.9 if it is an antibody.

VII. Claim 36, in so far as it is drawn to a method of producing antibodies using a polypeptide, classified in class 514, subclass 12.

VIII. Claim 36, in so far as it is drawn to a method of producing antibodies using a nucleic acid, classified in class 514, subclass 44.

IX. Claims 41, 42, 45, 57 and 58, in so far as they are drawn to a method of treating a patient comprising administering a compound that interacts with, binds to or is an agonist or antagonist of a protein, or a composition thereof, classification dependent on compound structure, for example class 424, subclass 143.1 if it is an antibody.

X. Claims 45 and 58, in so far as they are drawn to a method of treating a patient comprising administering a protein, or a composition thereof, classified in class 514, subclass 12.

XI. Claims 45 and 58, in so far as they are drawn to a method of treatment comprising administering a nucleic acid, vector, cell, or a composition thereof, classified in class 514, subclass 44.

XII. Claim 53, a method of detecting the presence of a nucleic acid in a sample, classified in class 435, subclass 6.

XIII. Claims 54, 55 and 57, in so far as they are drawn to a method of detecting the presence of a polypeptide in a sample (including methods of diagnosis), classified in class 435, subclass 7.2.

The inventions are distinct, each from the other because of the following reasons:

Inventions I, II and III and VI are directed to related products. The related inventions are distinct if the (1) the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect; (2) the inventions do not overlap in scope, i.e., are mutually exclusive; and (3) the inventions as claimed are not obvious variants. See MPEP § 806.05(j). In the instant case, the inventions as claimed have a materially different design, mode of operation and function. Furthermore, the inventions as claimed do not encompass overlapping subject matter and there is nothing of record to show them to be obvious variants.

The polypeptide of Group I and the nucleic acids of Group II have a materially different design, mode of operation and function for the following reasons: polypeptides (composed of amino acids) and polynucleotides (composed of purines and pyrimidines) are structurally distinct molecules; any relationship between them depends upon the information provided by the nucleic acid sequence open reading frame as it corresponds to the primary amino acid sequence of the encoded polypeptide. The search of the inventions of Group I and II together would impose a serious search burden. The two inventions have a separate status in the art as shown by different classifications. In cases such as this where descriptive sequence information is provided, the protein and nucleic acid sequences are searched in databases that are not coextensive. In addition, the technical literature search is not coextensive; a protein or nucleic acid may be described in the literature prior to the concomitant isolation and expression of the related nucleic acid or protein. Furthermore, a search of the nucleic acid sequences of Group II would require an oligonucleotide search, which is not likely to result in relevant art with respect to the polypeptide of Group I.

The polypeptide of Group I, the nucleic acid of Group II and the compound of Group VI each have a materially different design, mode of operation and function from the transgenic animal of Group III for the following reasons: the claimed transgenic animals are entire organisms that are physically and functionally distinct from the nucleic acids, polypeptides or compounds. Furthermore, the transgenic animals have a

separate status in the art as shown by the different classification from the polypeptides, nucleic acids and compounds.

The polypeptide of Group I and the compound of Group VI have a materially different design, mode of operation and function for the following reasons: Group I is directed to a polypeptide, and Group VI comprises compounds that binds to, or interacts with the polypeptide of Group I, including antibodies to the polypeptides of Group I. While the polypeptides of Group I and the antibodies encompassed by Group VI are both polypeptides, the polypeptide of Group I is a single chain molecule, whereas Group VI encompasses antibodies that comprise 2 heavy and 2 light chains containing constant and variable regions, including framework regions that scaffold the 6 complementarity determining regions involved in epitope binding. Thus, the polypeptide and the antibody are structurally distinct molecules; any relationship between the two depends on the correlation between the scope of the polypeptides that the antibody binds and the scope of the antibodies generated upon immunization with the polypeptide. Searching the inventions of Group II and III together would impose a serious burden. The two inventions have a separate status in the art as shown different classifications, and require different searches. A determination of novelty and unobviousness of a protein sequence requires a full-length amino acid search. However, such a search is not required to identify the antibodies of Group VI. Furthermore, antibodies that bind an epitope of a polypeptide of Group VI may be known even if the polypeptide is novel. In addition, the technical literature search for the polypeptide of Group I and the antibody of Group VI is not coextensive, e.g. an antibody may be described in the literature prior to discovery or sequencing of its binding target.

The nucleic acid of Group II and the compound of Group VI have a materially different design, mode of operation and function for the following reasons: the polynucleotides (composed of nucleic acids), and compounds are structurally distinct molecules. The compounds of Group VI encompass antibodies (polypeptides composed of amino acids). In the present claims, the polynucleotide will not encode an antibody or other compounds of Group VI, and the antibody or other compounds cannot be encoded by the polynucleotide. Therefore, the polynucleotide and compounds are

patentably distinct. Furthermore, there would be a serious search burden because a search of the polynucleotide of Group II would not be used to determine the patentability of an compound of Group VI and vice-versa.

Invention I is related to each of Inventions IV, VII, X and XIII as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the polypeptides can be used in a method of screening for compounds that interact with the polypeptide, a method of producing antibodies to the polypeptide, a method of treatment comprising administration of the polypeptide, or a method of detecting the polypeptide in a sample, each of which is a materially different method.

Invention I is unrelated to each of Inventions V, VIII, IX, XI and XII. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the polypeptides are not used in the a method of screening compounds using a transgenic animal, a method of producing antibodies to a nucleic acid, a method of treatment comprising administration of a compound or nucleic acid, or a method of detecting the nucleic acid in a sample.

Invention II is related to each of Inventions VIII, XI and XII as product and process of use. In the instant case the polynucleotides can be used in a method of producing antibodies to a nucleic acid, a method of treatment comprising administration of a nucleic acid, or a method of detecting the nucleic acid in a sample, each of which is a materially different method of use.

Invention II is unrelated to each of Inventions IV, V, VII, IX, X and XIII. In the instant case the nucleic acids are not used in a method of screening for compounds that interact with the polypeptide, a method of screening compounds using a transgenic animal, a method of producing antibodies to the polypeptide, a method of treatment comprising administration of a compound or a polypeptide, or a method of detecting the polypeptide in a sample.

Invention III is related to Invention V as product and process of use. In the instant case the transgenic animal can be used in a method of screening using a transgenic animal, but can also be used in a method of modulating the expression of the transgenic gene in the transgenic animal, which is a materially different method of use.

Invention III is unrelated to each of Inventions IV and VII-XIII. In the instant case the transgenic animal is not used in a method of screening for compounds that interact with the polypeptide, a method of producing antibodies to the polypeptide or nucleic acid, a method of treatment comprising administration of a compound, polypeptide or nucleic acid, or a method of detecting the nucleic acid or polypeptide in a sample.

Invention VI is related to each of Inventions IV, V, IX and XIII as product and process of use. In the instant case, the compound that interacts with a polypeptide can be used in a method of screening to identify a compound that interacts with a polypeptide, a method of treatment comprising administration of the compound, or a method of detecting the presence of a polypeptide in a sample, but can also be used in a method of generating antibodies to the compound, which is a materially different method.

Invention VI is unrelated to each of Inventions VII, VIII and X-XII. In the instant case the compounds that interact with a polypeptide is not used in the methods of a method of producing antibodies to the polypeptide or nucleic acid, a method of treatment comprising administration of a polypeptide or nucleic acid, or a method of detecting the nucleic acid in a sample.

Groups IV, V and VII-XIII are directed to related processes. The related inventions are distinct if the (1) the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect; (2) the inventions do not overlap in scope, i.e., are mutually exclusive; and (3) the inventions as claimed are not obvious variants. See MPEP § 806.05(j). In the instant case, the inventions as claimed are not capable of use together and/or have a materially different mode of operation. Furthermore, the inventions as claimed do not encompass overlapping subject matter and there is nothing of record to show them to be obvious variants.

The methods of Groups IV, V and VII-XIII are not capable of use together and/or have a materially different mode of operation for the following reasons: the methods of Groups IV and V are directed to using a polypeptide or transgenic animal to identify a compound that interacts with, or binds to, or is an antagonist to a polypeptide, which is not required by any of the other inventions. Furthermore, Groups IV and V are not capable of use together because each method uses a structurally distinct molecule or organism (polypeptide or transgenic animal). The methods of Groups VII and VIII are directed to using a polypeptide or nucleic acid to generate antibodies, which is not required by any of the other inventions. Furthermore, Groups VII and VIII are not capable of use together because each method uses a structurally discrete molecule (polypeptide or nucleic acid). The methods of Groups IX-XI are directed to using a compound, polypeptide, or nucleic acid in a method of treatment, which is not required by any of the other methods. Furthermore, Groups IX, X and XI are not capable of use together because each method uses a structurally discrete molecule (compound, polypeptide or nucleic acid). The methods of Groups XII and XIII are directed to detecting a nucleic acid or polypeptide in a sample, which is not required by any of the other methods. Furthermore, Groups IX, X and XI are not capable of use together because each method detects a structurally discrete molecule (nucleic acid or polypeptide). Finally, the distinct steps and ingredients of each method of Groups IV, V and VII-XIII require separate and distinct searches.

Because these inventions (Groups I-XIII) are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, separate search requirements and/or divergent subject matter, restriction for examination purposes as indicated is proper.

Applicant is advised that for the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim

remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Further Restriction Within Groups I-XIII

For whichever group is elected, further restriction within the elected group is required. Applicants are required to select one of the following Conrad GPCRs encompassed by the claims:

(1) human Conrad GPCR of SEQ ID NO: 3, and related nucleic acid sequences (SEQ ID NO: 1 and 2);

(2) murine Conrad GPCR of SEQ ID NO: 5, and related nucleic acid sequences (SEQ ID NO: 4 and 6);

(3) human Conrad GPCR of SEQ ID NO: 9, and related nucleic acid sequences (SEQ ID NO: 7, 8 and 15) and the fusion protein of SEQ ID NO: 14 and related nucleic acid sequence of SEQ ID NO: 13.

(4) murine Conrad GPCR of SEQ ID NO: 11 and related nucleic acid sequences (SEQ ID NO: 10 and 12).

[SEQ ID NOs: 16, 17 and 18 have not been placed in any of the above groups because the relationship between these sequences and the above sequences is not clear from the specification. Applicants are requested to clarify the relationship of these sequences in the response to this restriction requirement].

The claims will be examined to the extent that the elected group relates to the selected Conrad GPCR variant. For example, if Group I is elected (polypeptides), and (1) above is chosen, the claims of Group I will be examined as they are directed to polypeptides of SEQ ID NO: 3 and polypeptides encoded by SEQ ID NO: 1 or 2.

The inventions are directed to related products (Conrad GPCRs with some sequence similarity). The related inventions are distinct if the (1) the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect; (2) the inventions do not overlap in scope, i.e., are mutually exclusive; and (3) the inventions as claimed are not obvious variants. See MPEP § 806.05(j). In the instant case, the inventions as claimed have a materially

different design, mode of operation and function. Each Conrad GPCR protein is a structurally different molecule with a different amino acid sequence. Similarly, each variant is encoded by a nucleic acid with a different nucleic acid sequence. Therefore, the compounds that interact with the polypeptides, transgenic animals expressing the polypeptides, and methods of using the polypeptides, nucleic acids, transgenic animals and compounds are also patentably distinct. Furthermore, the inventions as claimed do not encompass overlapping subject matter and there is nothing of record to show them to be obvious variants. Although classifications for the polypeptides, nucleic acids, transgenic animals, and compounds are overlapping, each represents a patentably distinct product, having a different sequence and structure, and requiring a separate sequence search.

Applicants are advised that this is not a species election.

Election of species in Groups I, II, VI, IX, X, XI or XIII

In addition to the above restriction requirement, a further election of species is required if Applicants elect one of Groups I, II, VI, IX, X, XI or XIII. Applicant must elect one of the following patentably distinct species of condition: long QT syndrome-4 with sinus bradycardia disease, mental health wellness-2 disease; psoriasis or susceptibility to psoriasis; dentin dysplasia; type II disease; neutropenia; and neonatal alloimmune disease.

Each condition is considered to constitute a patentably distinct species because they have different etiologies, different symptoms (including different affected systems, tissues and/or organs) and different methods of treatment dependent on the affected systems, tissues and/or organs, and require separate searches. Search of more than a single species would constitute an undue burden on the Office.

Applicant is required under 35 U.S.C 121 to elect a single species of condition for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claims 40, 41, 42, 45, 46, 47 and 55 are generic and claims 56-60 recite each of the claimed species as a Markush group.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered non-responsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C 103(a) of the other invention.

Rejoinder

The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product

claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder**. Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachary C. Howard whose telephone number is 571-272-2877. The examiner can normally be reached on M-F 9:30 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary B. Nickol can be reached on 571-272-0835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Elizabeth C. Kemmerer

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ELIZABETH KEMMERER
PRIMARY EXAMINER